

TWO NEW SPECIES AND ONE NEW NAME IN THE
GESNERIACEAE FROM COSTA RICA

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ABSTRACT. Two new species of Gesneriaceae from the Caribbean slope of Costa Rica from the genera *Paradrymonia* and *Nautilocalyx* are described and illustrated. A new name in *Nautilocalyx* is proposed for *P. bullata* and a full description is provided.

Key Words: *Paradrymonia*, *Nautilocalyx*, Gesneriaceae, Mesoamerica, Costa Rica

Preparation of the treatment of the Gesneriaceae for the *Manual de Plantas de Costa Rica* project has revealed a new species of *Nautilocalyx* Linden ex Hanstein and one of *Paradrymonia* Hanstein from the Caribbean slope of Costa Rica. *Nautilocalyx* greatly resembles the genus *Paradrymonia* and differences stated by Hanstein (1853) in the original description provide no diagnostic characters for distinguishing these two genera. However, in recent works (Kvist et al. 1998; Skog 1979), *Paradrymonia* has been separated from *Nautilocalyx* by differences in habit (epiphytic vs. terrestrial), stem length in relation to leaf length (stems shorter than leaves vs. longer), anisophylly (strongly anisophyllous vs. isophyllous to subisophyllous), and inflorescence features (flowers congested vs. not congested).

Nautilocalyx is a neotropical genus of approximately 50 species characterized by its terrestrial habit, erect stems, showy corollas, and fleshy capsules. Only one species was previously known from Costa Rica, *N. dressleri* Wiehler.

***Nautilocalyx purpurascens* Kriebel, sp. nov.** TYPE: COSTA RICA. Limón: Cordillera de Talamanca, Fila Matama, Cerro Muchilla, 9°47'40"N, 83°06'30"W, 850 m, 8 Apr 1989, R. Robles 2704 (HOLOTYPE: INB!; ISOTYPES: MO, US). Figure 1.

A *Nautilocalyx punctatus* cui affinis, petioli 5–8 cm longis, foliis glabris vel puberulis, nectarii glandulae 2 opposita differt.

Terrestrial, perennial, herb to subshrub; stems unbranched, subquadrate, glabrous, erect, to 40 cm tall, ca. 5 mm in diameter, the internodes

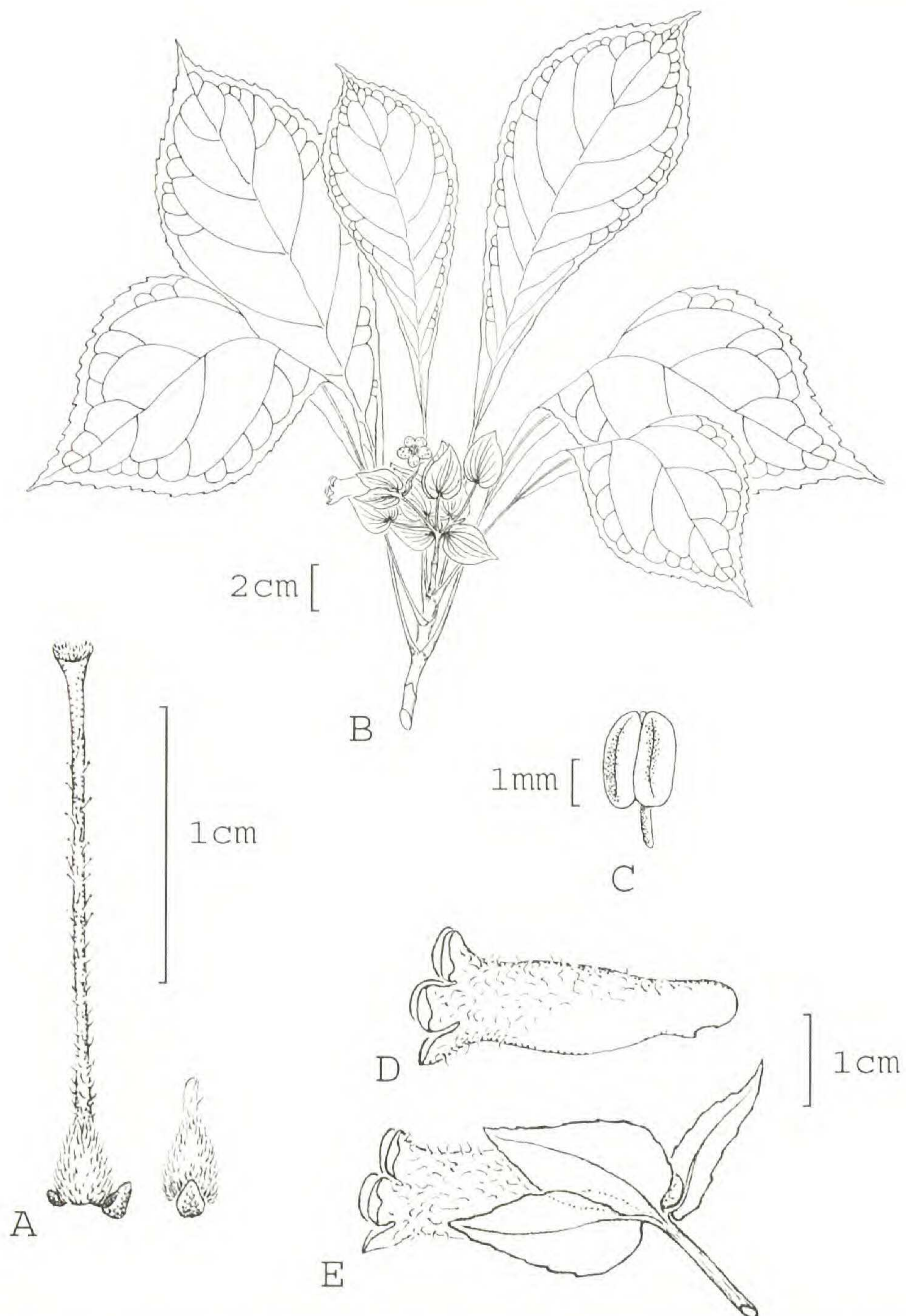


Figure 1. *Nautilocalyx purpurascens*. A. Pistil with opposite nectariferous glands at base of ovary. B. Habit. C. Filament apex and anther. D. Corolla. E. Corolla in calyx (R. Robles 2704).

1–3 cm long, rarely with adventitious roots in the lower nodes; leaf pairs equal to subequal, the petioles 5–8 cm long, fleshy, green flushed with purple, glabrous to puberulous, the lamina 13–20 (30) × 4–6 (10) cm, elliptic to oblanceolate, basally acute to attenuate on the petiole, apically

acuminate, serrate, membranous, green above, purple below, glabrous to sparsely puberulous on both surfaces, the lateral pairs of veins 8–11. Inflorescence axillary, cymes of 5–10 flowers, the peduncle 5–10 mm long, the prophylls and subtending bracts 15–25 × 9–21 mm, ovate, serrulate, similar to the calyx lobes, green to light purple, puberulous, the pedicels 5–20 mm long; calyx lobes 5, equal, 20–25 × 10–13 mm, lanceolate-ovate, membranous, connate for 1–2 mm, acuminate, serrate, green to light purple, puberulous; corolla 3–3.5 cm long, oblique in the calyx, infundibular, the spur ca. 2 mm long, glabrous to puberulous, the proximal half a narrow tube, white, sparsely pilose above, glabrous below, distal half gradually expanding, white, sparsely pilose on both sides, the lobes 5, subequal, ca. 10 × 7 mm, entire to crenulate, the inside and especially the entrance of the tube purple spotted, dorsally with short glandular hairs; stamens 4, included, the filaments adnate for 4 mm to the base of the corolla tube, ca. 2 cm, glabrous, the anthers coherent, each theca 2 × 1.8 mm, the theca dehiscent by longitudinal slits; ovary 3 mm long, sericeous, the style ca. 2 cm long, glandular pilose, the stigma stomatomorphic; disc composed of two opposite nectariferous glands, the ventral gland smaller, 0.5 × 0.3 mm, the dorsal gland larger, 1.5 × 1 mm, both glabrous. Capsule not seen.

DISTRIBUTION AND ECOLOGY. This species is known only from three specimens in the type locality, in riparian habitat, at 800–900 m. Specimens from Panama may also represent the same species (*vide* Skog).

ETYMOLOGY. The specific epithet refers to the usually purple stems, petioles, and abaxial surface of the leaf blade as well as the purple-spotted corolla of this species.

Nautilocalyx purpurascens is easily distinguished from its congeners by its glabrous to puberulous and usually purple stems, petioles, leaf underside and calyx, its purple-spotted corolla, and disc with two opposite nectariferous glands. The purple-spotted corolla of *N. purpurascens* most closely resembles that of *N. punctatus* Wiehler from Amazonian Venezuela from which it differs mainly by having glabrous to puberulous vegetative parts, much longer petioles, and a disc with two opposite nectariferous glands instead of a single dorsal gland.

PARATYPES. COSTA RICA. Limón: Cordillera de Talamanca, Fila Matama, Cerro Muchilla, 9°46'50"N, 83°05'30"W, 850 m, 5 Apr 1989, *R. Robles* 2655 (INB, MO, US); Cordillera de Talamanca, Fila Matama, Cerro Muchilla, 9°47'40"N, 83°06'30"W, 850 m, 8 Apr 1989, *R. Robles & A. Chacón* 2719 (INB, MO, US).

Nautilocalyx biserrulatus Kriebel, *nom. nov.* *Paradrymonia bullata* Gómez-Laur. & Chavarría, *Brenesia* 33: 145–147, 1990 [1991].
TYPE: COSTA RICA. San José: Tarrazú, 10 Feb 1988, J. Gómez-L. 11686 (HOLOTYPE: CR!; ISOTYPES: F. USJ); non *N. bullatus* (Lem.) Sprague, *Bull. Misc. Inform. Kew* 1912: 89. 1912.

This species was originally described when only a few specimens were available for examination. Further explorations in the southern Pacific lowlands and middle elevations of Costa Rica have produced ample material. In order to better characterize the species, a full description is provided here.

Terrestrial, perennial, herbs to subshrubs; stems unbranched, villous, reddish, erect or ascending, to 40 cm tall, ca. 6 mm in diam., the internodes 8–20 mm long, sometimes with adventitious roots, when present generally in basal nodes; leaf pairs equal, subequal to rarely unequal, the petioles (2) 3.5–6 cm long, brownish, villous, the lamina elliptic to oblanceolate, 10–18 (24) × 3–6.5 cm, base acute, apex acuminate, margin biserrate, membranous, green and bullate on both sides, glabrescent to villous above, strigose to villous below, the lateral pairs of veins 9–11. Inflorescence axillary cymes of 2–5 flowers, the peduncle reduced or absent, the prophylls and subtending bracts linear to lanceolate, ciliate to serrulate, glabrate to villous, to 25 mm long, green, the pedicels 5–15 mm long; calyx lobes 5, equal, 17–21 × 1–2 mm, lanceolate to linear-lanceolate, membranous, free to the base, acuminate, biserrate, green, puberulous to villous; corolla oblique in the calyx, infundibular, ca. 3 cm long, the spur ca. 2 mm long, villous, white, proximal half a narrow tube gradually expanding towards the limb, the lobes 5, subequal, ca. 8 × 6 mm, entire; stamens 4, included, the filaments ca. 17 mm, adnate for 3 mm to the base of the corolla tube, glabrous, the anthers coherent, each anther 1.5–1.2 mm, the thecae dehiscing by longitudinal slits; ovary 4 mm long, sericeous, the style ca. 2 cm long, glabrous, the stigma stomatomorphic; disc a single dorsal nectariferous gland, 1.5 × 1 mm, entire, glabrous. Capsule ovate.

The species is always a terrestrial herb or subshrub with conspicuous stems to 40 cm long, generally equaling or surpassing leaf length, as is typical of *Nautilocalyx*, the leaves are well spaced along the stem and do not form an agglomerate rosette like most species of *Paradrymonia*. The leaves were originally described as anisophyllous like a typical *Paradrymonia* but have actually proven to be isophyllous to subisophyllous as in *Nautilocalyx*. Although the inflorescence was originally described as congested on the upper part of the stems with flowers, with pedicels

up to only 10 mm, recent material shows that flowers are also borne on up to 4 nodes below the stem apex on pedicels that reach 15 mm in length, producing a non congested inflorescence as is common in *Nautilocalyx*. Although both *Nautilocalyx* and *Episcia* Mart. often have species with bullate leaves (as are those of the present species), only *Episcia* has stolons, lacking in this species. On these characters and those listed by Kvist et al. (1998) and Skog (1979) this species is best placed in *Nautilocalyx* (see Table 1).

ETYMOLOGY. The specific epithet refers to the double-serrate leaf blade margin of this species.

Paradrymonia ommata L. E. Skog from Bocas del Toro, Panama, is similar to *Nautilocalyx biserrulatus* in the following diagnostic characters: they are both terrestrial herbs with evident stems that equal or surpass leaf length, both usually have biserrate leaf margins, the leaves are evidently petiolate, vegetative parts are glabrate to sparsely villous, calyx lobes are linear to lanceolate, and they have similar-sized corollas. They differ in that *P. ommata* has usually longer bracts, 1–5 cm long, and a corolla with the purple eye and purple veins (vs. bracts to 2.5 cm and an entirely white corolla). I am reluctant at this time to determine if the species are conspecific or to transfer *P. ommata* to *Nautilocalyx* pending further collections of *P. ommata*, a species otherwise known only from the type.

SPECIMENS EXAMINED. COSTA RICA. Puntarenas: Rancho Quemado, 6 Feb 1991, *M. M. Chavarría* 423 (INB); Corcovado National Park, Fila Matajambre, 7 May 1994, *J. González* 251 (INB); Fila Costena, Fila Cruces, Río Piedras Blancas, 8 Dec 1993, *M. Grayum* 10626 (INB); Jiménez, Dos Brazos de Río Tigre, Cerro Mueller, 26 Aug 1990, *G. Herrera* 4143 (INB, US); Corcovado National Park, Cerro Rincón, 2 Aug 1990, *C. Morales* 10 (INB); Rincón, Rancho Quemado, 26 Oct 1990, *F. Quesada* 196 (INB). San José: Tarrazú, Faja Costena del Valle del Parrita, Cerro Nara, 26 Jul 1995, *M.M. Chavarría* 910 (INB, US); Tarrazú, *J. Gómez-L.* 11686 (CR); Tarrazú, Fila Bustamante, 18 Apr 1994, *V. Ramírez et al.* 318 (INB, MO, US).

Paradrymonia is also a small neotropical genus with approximately 30 species. Costa Rica has a great diversity of species of the genus, with about 11 species, as a result of its proximity to the possible center of diversity of the genus in Panama (Kvist et al. 1998).

Paradrymonia alata Kriebel, *sp. nov.* TYPE: COSTA RICA. Limón: Cordillera de Talamanca, Cantón de Matina, 200 m aguas debajo de la confluencia de Quebrada Canabral con Río Barbilla, 10°00'10"N, 83°25'30"W, 100 m, 5 Nov 1988, *G. Herrera* 2287 (HOLOTYPE: INB!; ISOTYPE: MO). Figure 2.

Table 1. Comparison of diagnostic features in the genera *Nautilocalyx* and *Paradrymonia* with those of *N. biserrulatus*.

<i>Nautilocalyx</i>	<i>Paradrymonia</i>	<i>N. biserrulatus</i>
Plants terrestrial	Plants generally epiphytic	Plants terrestrial
Stems evident, equaling or surpassing leaf length	Stems reduced or absent, usually forming a rosette	Stems evident, usually equaling or surpassing leaf length
Leaves isophyllous to subisophyllous	Leaves generally strongly anisophyllous	Leaves isophyllous to subisophyllous or rarely anisophyllous
Leaf blades generally bullate	Leaf blades generally not bullate	Leaf blades bullate
Leaf blade base generally acute or truncate	Leaf blade base generally attenuate to decurrent	Leaf blade base generally acute or truncate
Petiole generally evident	Petiole generally reduced or obscured by decurrent leaf base	Petiole evident
Inflorescence not congested in the leaf axils	Inflorescence usually congested in the leaf axils	Inflorescence congested or not in the leaf axils

A *Paradrymonia longipetiolata* cui affinis, foliis majoribus, attenuatis; calycis lobatis ovato-lanceolatis, puberulis differt.

Epilithic, perennial, rosulate herb; stems unbranched, subquadrate, strigillose, reddish, erect or ascending, to 10 cm tall, ca. 1 cm in diameter, internodes 5–9 mm long, with adventitious roots; leaf pairs equal to extremely unequal, the petioles 22–29 cm long, fleshy, winged, reddish, strigillose, the lamina 22–27 × 13–20 cm, ovate to ovate-oblong, basally truncate or rounded, apically acute to acuminate, serrate, membranous, green above, whitish below, puberulous on both surfaces, the lateral pairs of veins 11. Inflorescence of axillary cymes of 5–11 flowers, the peduncle reduced, the prophylls and subtending bracts ca. 9 × 1–2 mm long, linear to lanceolate, entire to ciliate, glabrate to puberulous, reddish, puberulous, the pedicels 1–5 cm; calyx lobes 5, subequal, 20–25 × 5–11 mm, lanceolate-ovate, membranous, connate for 1–3 mm, acuminate, ciliate to serrulate, green with red or magenta base and occasionally longitudinal streaks, puberulous; corolla ca. 5 cm long, oblique in the calyx, infundibular, the spur ca. 5 mm long, glabrous to puberulous, proximal half a narrow tube, white, sparsely

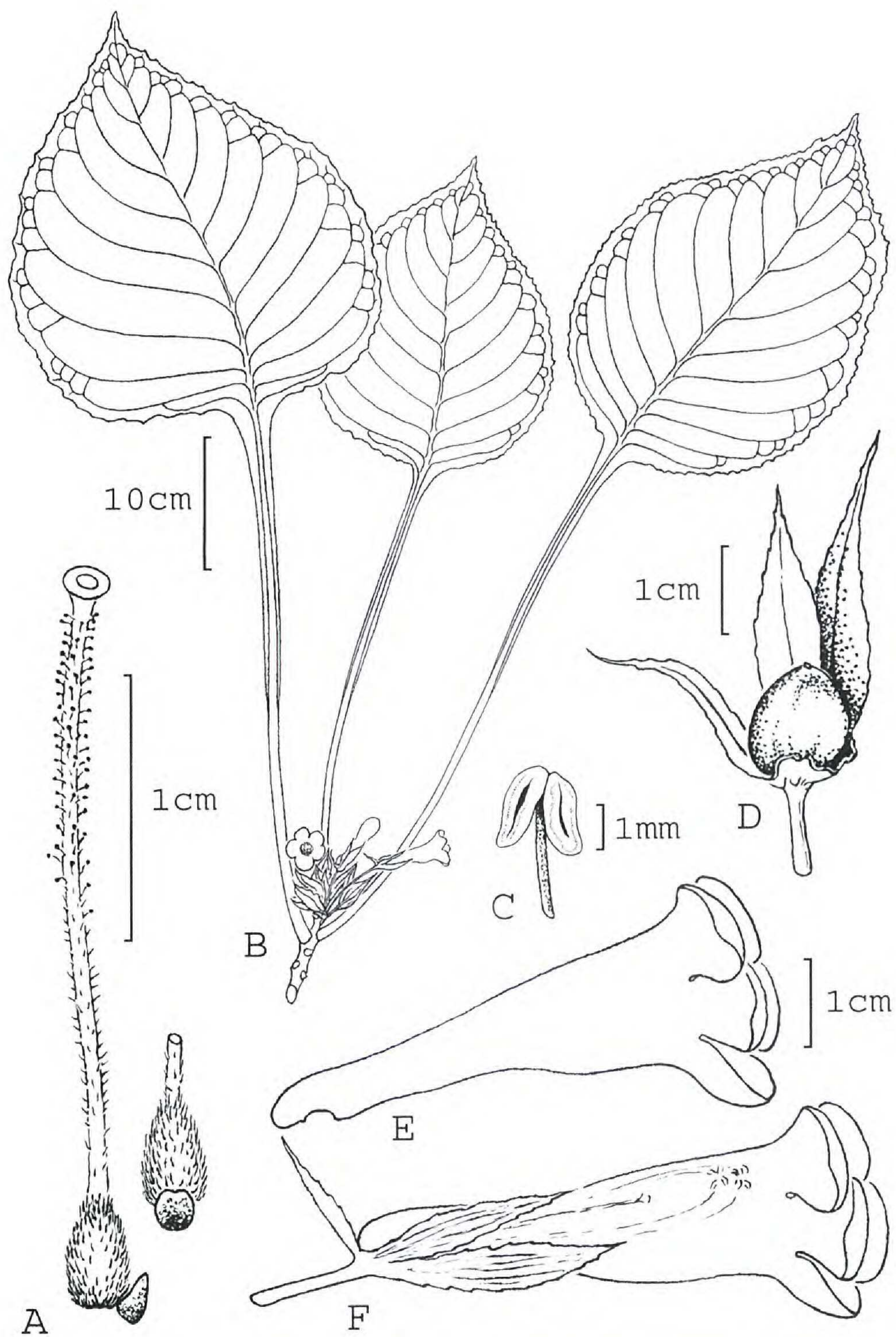


Figure 2. *Paradrymonia alata*. A. Pistil with dorsal nectariferous gland at base of ovary. B. Habit. C. Filament apex and anther. D. Capsule in calyx. E. Corolla. F. Corolla in calyx (G. Herrera 2287).

pilose above, glabrous below, distal half gradually expanding, white, occasionally with inconspicuous yellowish or reddish hues inside the tube, sparsely pilose on both sides, the lobes 5, subequal, ca. 13×11 mm, entire, the dorsal part of the tube inside with short glandular hairs; stamens 4, included, somewhat didynamous, ca. 4 cm, the filaments adnate for 6 mm to the base of the corolla tube, glabrous, each anther apically coherent to its homologous pair, each theca 2×1.8 mm, the thecae dehiscing by longitudinal slits; ovary 3 mm long, sericeous, the style ca. 3 cm long, densely glandular-pilose, the stigma capitate; disc of a single double-connate nectariferous dorsal gland, 1.5×1 mm, entire, glabrous. Fruit an ovate, bivalved, fleshy, white, glabrous capsule; seeds fusiform, 0.5×0.25 mm, dark brown when dry, finely striate.

DISTRIBUTION AND ECOLOGY. This species is known only from the Caribbean slope of Costa Rica in the Hitoy-Cerere Biological Reserve and Barbilla National Park from 50–250 m where it occurs in very wet forest.

ETYMOLOGY. The specific epithet refers to the winged petiole of this species.

Paradrymonia alata is characterized by its large leaves with long-decurrent leaf base and winged petiole, its lanceolate-ovate puberulous calyx lobes almost free to the base, and its large corollas up to 5 cm long. It is similar to the higher elevation *P. longipetiolata* (Donn.Sm.) Wiehler, which has smaller leaf blades with acute bases and linear to linear-lanceolate and densely pilose calyx lobes. It is also similar to *P. macrophylla* Wiehler, which has pedicels 8–11 mm long, the 2 lateral and 2 lower calyx lobes connate for ca. 1.6 cm, and the corolla wine-red to maroon-red spotted (vs. pedicels 1–5 cm long, calyx lobes free almost to the base, and an entirely white corolla with occasional yellowish or reddish hues inside the tube in *P. alata*).

PARATYPES: COSTA RICA. Limón: Cordillera de Talamanca, Reserva Biológica Hitoy-Cerere, Valle del Río La Estrella, $9^{\circ}38'55''\text{N}$, $83^{\circ}03'10''\text{W}$, 200 m, 9 Feb 1989, *G. Herrera et al.* 2367 (INB, MO); Cordillera de Talamanca, Cantón de Matina, Quebrada Canabral, $10^{\circ}02'00''\text{N}$, $83^{\circ}24'30''\text{W}$, 100 m, 8 Apr 1989, *M. Grayum et al.* 8881 (INB, MO, US).

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